3-5 The student will demonstrate an understanding of how motion and sound are affected by a push and pull on an object and the vibration of an object (Physical Science)

Key Concepts
Position: reference point, distance scale, measurement, and position terms
Motion: speed, direction, push, pull, mass
Pull of Gravity
Sound: Vibrating objects, pitch, volume

Supporting Content Web Sites

Science Clips – Push and Pull
http://www.bbc.co.uk/schools/scienceclips/ages/5_6/pushes_pulls.shtml
This website offers an interactive game for students to determine what kind of push or pull will make an object go further. A quiz is also offered.
3-5.3

Science Clips – Sound and Hearing
http://www.bbc.co.uk/schools/scienceclips/ages/5_6/sound_hearing.shtml
This interactive website offers a game for students to determine what causes sound and how does it get louder. A quiz is also offered.
3-5.5; 3-5.7

Science Clips – Force and Motion
http://www.bbc.co.uk/schools/scienceclips/ages/6_7/forces_movement.shtml
This website allows students to change the incline of a race track to see how it affects the motion of a toy car. A quiz is offered also.
3-5.4

Science Clips – Changes in Sounds
http://www.bbc.co.uk/schools/scienceclips/ages/9_10/changing_sounds.shtml
Students have the opportunity to discover how pitch and volume are affected by making changes on a variety of instruments. There is a quiz also.
3-5.6

Revise Wise – Sound
http://www.bbc.co.uk/schools/revisewise/science/physical/15_act.shtml
Students are able to see and hear objects vibrate. They can test their knowledge with an interactive game.
3-5.5

Try Science – Sound
http://www.tryscience.org/experiments/experiments_japan_online.html
This website allows students to learn how sound works and lets them use sound waves to guide them through a maze. Sound "waves" not included in this 3rd Grade Indicator, but fun for advanced students. 3-5.5

The Art of Science – Ben Franklin's Instruments
http://www.pbs.org/safarchive/4_class/45_pguides/pguide_804/4484_franklin.html#act3
This web site includes directions on how to make a variety of instruments.
3-5.5

Reeko's Mad Science Lab
http://www.spartechsoftware.com/reeko/Experiments/ExpGoodVibrations.htm
This site gives students directions on creating a simple device to allow them to hear and see sound vibrations.
3-5.5

Sound Web Quest
http://www.radford.edu/~sbisset/soundwq.htm
This site gives students a chance to do some online research about sound.
3-5.5; 3-5.6; 3-5.7; 3-5.8

Scholastic – Magic School Bus Lab – Sound
http://www.scholastic.com/magicschoolbus/simplescience/archive/labs/soundvision.htm
This is a fun experiment written for kids.
3-5.5

Suggested Literature

Still, Darlene (2004). *Amazing Science: Motion: Push and Pull, Fast and Slow.* Minneapolis, MN: Picture Window Books
ISBN: 1404802509
3-5.2
This book allows children a look at forces and relative motion in familiar situations, like riding in a car or kicking a ball. The text includes questions, examples, and explanations. Illustrations reinforce a good foundation of content.

Royston, Angela (2001). *My World of Science: Forces and Motion.* Chicago, IL: Heinemann Library
ISBN: 1-58810-240-8
3-5.2; 3-5.3
This book features action-filled photos of athletes and children with toys. It also includes two easy experiments to demonstrate the concept of friction.

Royston, Angela (2001). *My World of Science: Sound and Hearing.* Chicago, IL: Heinemann Library.
ISBN: 1-58810-246-7
3-5.5
The book compares the plucking of a cord on an instrument to the creation of ripples on a pond. The book includes a safety note about how loud noises can be damaging to our ears, and how take care of our ears so we can hear for many more years.

Olien, Rebecca (2005). *Senses: Hearing*. Manheto, MN: Capstone Press.
ISBN: 0736843019
3-5.5
This book illustrates the principles of sound and relates it to the everyday function of hearing.

Bayrock, Fiona (2005). *Sound: A Question and Answer Book.* Manheto, MN: Capstone Press.
ISBN: 0736854495
3-5.5; 3-5.6; 3-5.7; 3-5.8
Clear illustrations and photographs help students understand the concepts of sound. A variety of questions and answers are included.

Cobb, Vicki (2004). *I Fall Down.* Harper Collins Publishers.
ISBN: 0-688-17842-1
3-5.4
This science book introduces young children to the concepts of gravity and weight. The concepts are reinforced through many real-life examples.

Pipe, Jim (2003). *What Does a Wheel Do?* Copper Beach Books.
ISBN: 0-7613-1837-2
3-5.4
This book features questions that are posed about how and why things move. Questions are answered by simple investigations of shapes, surfaces, and slopes using ordinary materials.

Sayre, April Pulley (2002). *Secrets of Sound: Studying the Calls and Songs of Whales, Elephants and Birds* (Scientists in the Field series). Houghton Mifflin.
ISBN: 0-618-01514-0
3-5.5; 3-5.6; 3-5.7; 3-5.8
This book describes bioacoustic research and its contribution to animal behavioral science.

Old, Wendy (2002). *To Fly: The Story of the Wright Brothers.* Clarion Books.
ISBN: 0-618-13347-X
3-5.1; 3-5.2; 3-5.3; 3-5.4
This book gives the reader insight into the inquiry strategies modeled by the Wright brothers. Using everything from kites to gliders to airplanes, the reader is involved with the Wright Brothers as they contemplate manned flight.

Busby, Peter (2003). *First to Fly: How Wilbur and Orville Wright Invented the Airplane*. Crown Publishers.
ISBN: 0-375-81287-3
3-5.1; 3-5.2; 3-5.3; 3-5.4
The Wright Brothers were given a flying toy as children. This book chronicles their lives and how the toy inspired them.

Suggested Streamline Video

Laws of Motion
ETV Streamline SC
Part I: Introduction (57 sec) and Part II Gravity of Mass (2:34 min)
Isaac Newton himself shows students how gravity affects objects. Exciting graphics and re-creations allow students to see how gravity relates to real life. Experiments with baseballs and other common objects encourage students to make science exploration recreational.
3-5.3; 3-5.4

TLC Elementary School: Rules of Motion and Forces
Part 1: Measuring the Motion of an Object (2:55 min)
Using a softball game, examples of how the motion of a softball can be measured are explored. The sections on acceleration and velocity are not appropriate for 3rd grade and should not be emphasized with students.
3-5.2

Sound: A First Look
ETV Streamline SC
This program explains that sound is caused by something vibrating. It then describes how people use sound to communicate; how sound varies in its loudness or softness (volume) and its highness or lowness (pitch).
17:00
3-5.5; 3-5.6

Stage One Science: Sounds OK
ETV Streamline SC
"Sounds O.K." explores the concepts that all sounds are made by objects vibrating; sounds are heard by the ear and can be made louder or softer, higher or lower; and that sound can be reflected. Children make a variety of instruments which may be banged, plucked, shaken and blown.
15:00
3-5.5; 3-5.6

Career Connections

Audiologist
Audiologists test people's hearing and assist them with improving their hearing through the use of hearing devices.

Pilot
Pilots fly a variety of aircraft from helicopters to passenger jets to cargo planes to fighter jets.